I4 DOOR LOCK & THEFT DETERRENT

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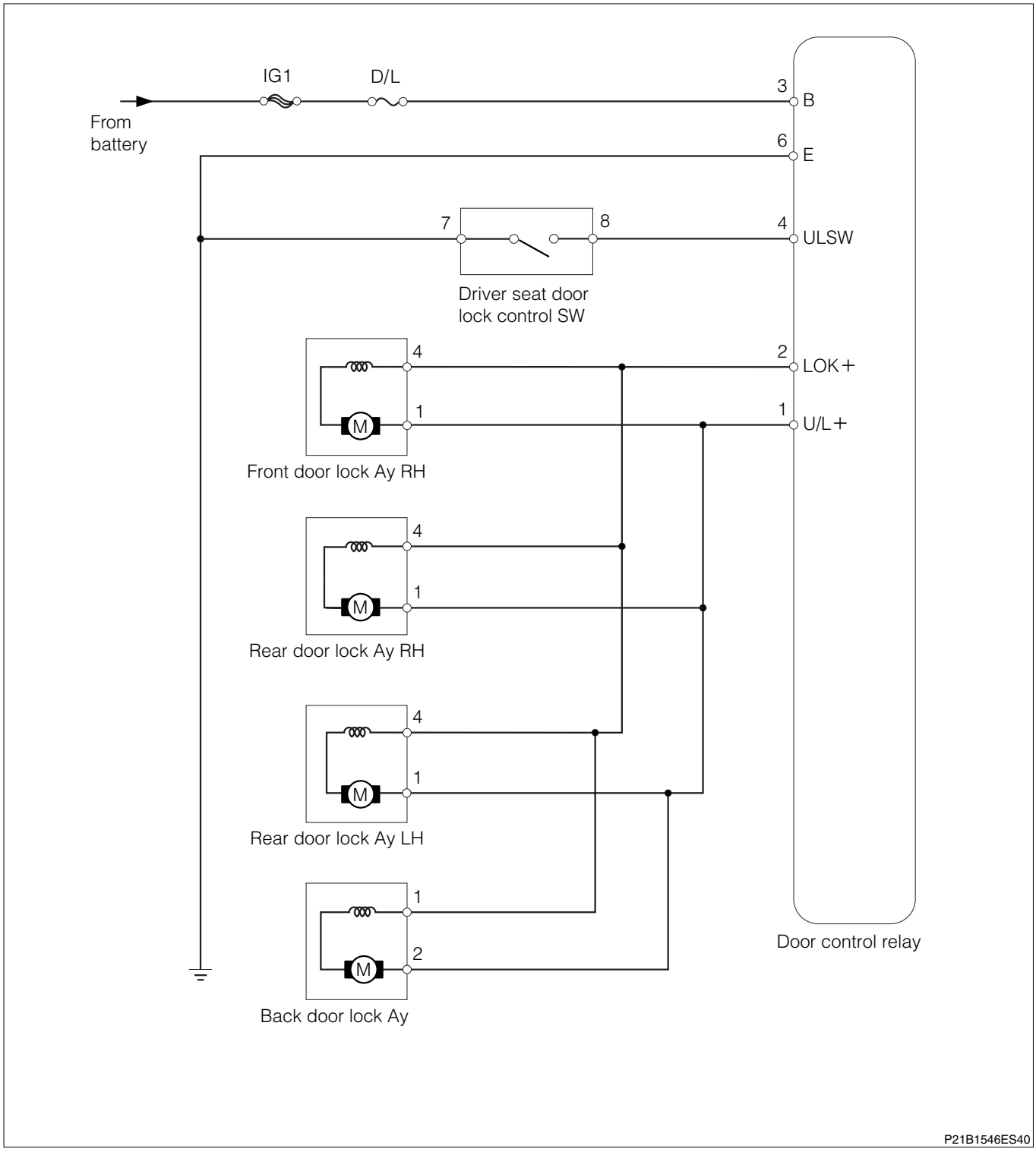
■ POWER DOOR LOCK SYSTEM

1 OUTLINE

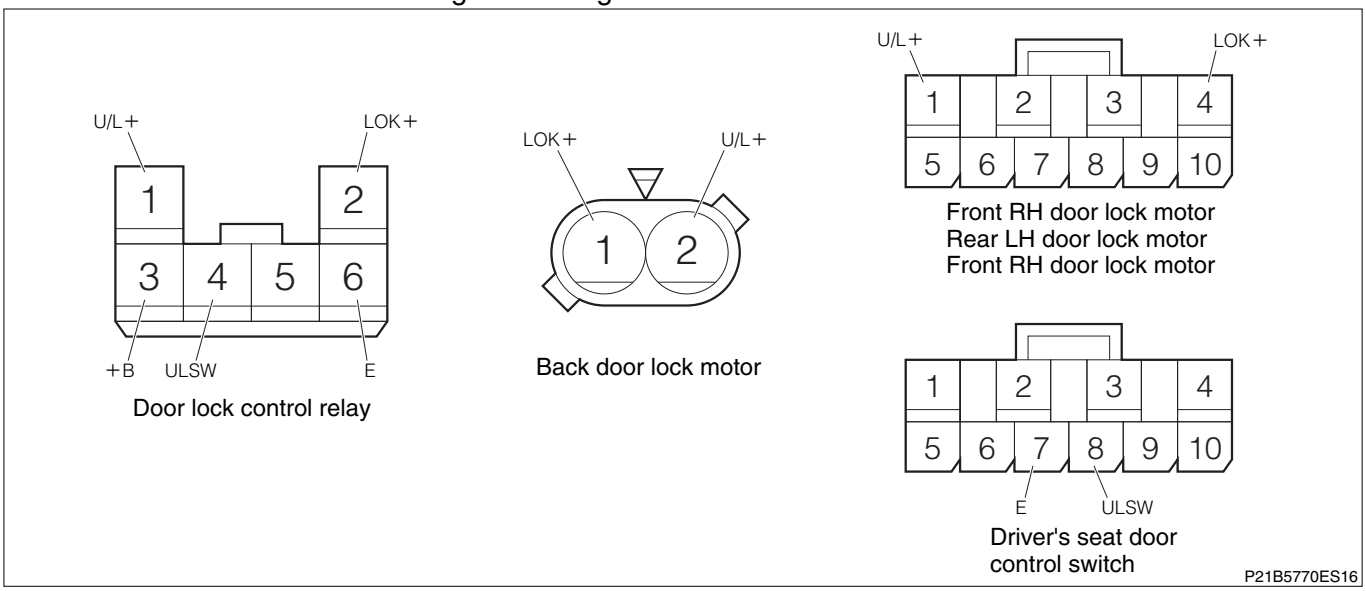
1-1 DESCRIPTION

1. A power door lock has been provided for all vehicles. The front passenger seat door, the right and left rear doors and the back door (luggage compartment door) can be locked and unlocked by means of the driver's seat key cylinder operation.

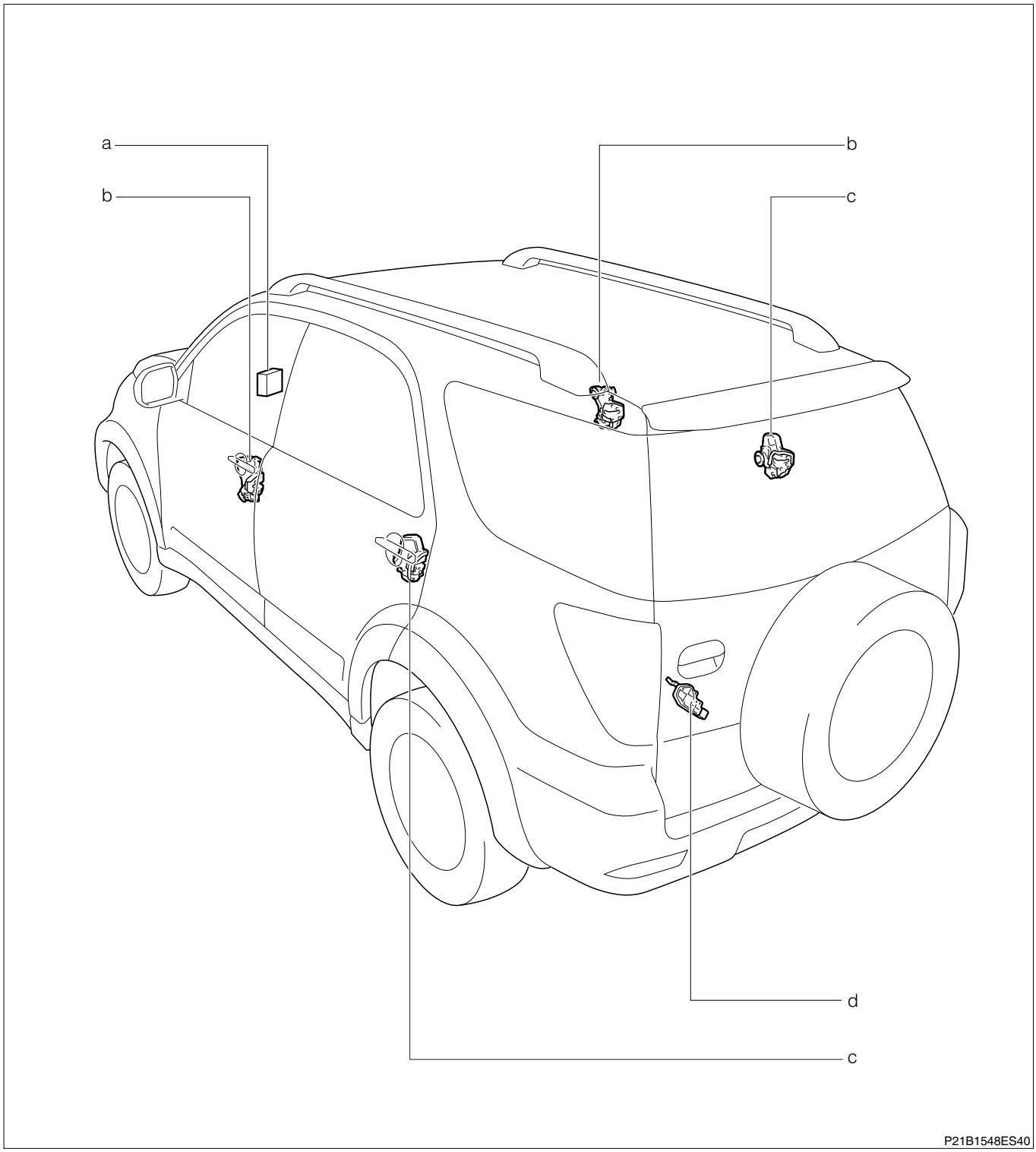
1-2 SYSTEM WIRING DIAGRAM



Door lock connector terminal arrangement diagram



1-3 LOCATION OF COMPONENTS



The illustration shows a typical example.

a	Door lock control relay
b	Front door lock Ay
c	Rear door lock Ay
d	Back door lock Ay

2 CONTROL

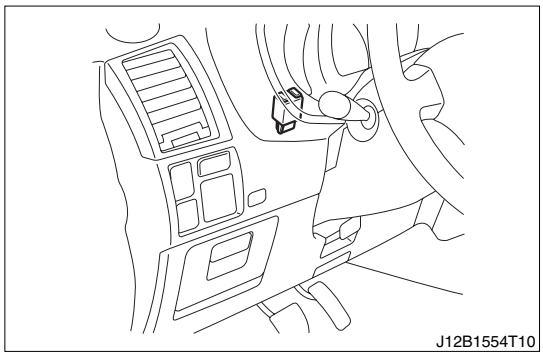
2-1 POWER DOOR LOCK CONTROL INTERLOCKING WITH DRIVER'S SEAT DOOR LOCK

1. When any of the following conditions are satisfied, all the other door locks will be set to "LOCK".
   (1) When the driver's seat door lock lever is switched from the "UNLOCK" position to the "LOCK" position
   (2) When the key is inserted into the driver's seat key cylinder and turned in the "LOCK" direction
2. When any of the following conditions are satisfied, all the other door locks will be set to "UNLOCK".
   (1) When the driver's seat door lock lever is switched from the "LOCK" position to the "UNLOCK" position
   (2) When the key is inserted into the driver's seat key cylinder and turned in the "UNLOCK" direction

3 COMPONENTS

3-1 DOOR CONTROL RELAY

1. The door control relay controls the "LOCK" and "UNLOCK" functions of all doors, except the driver's seat door.



■ IMMOBILIZER SYSTEM

1 OUTLINE

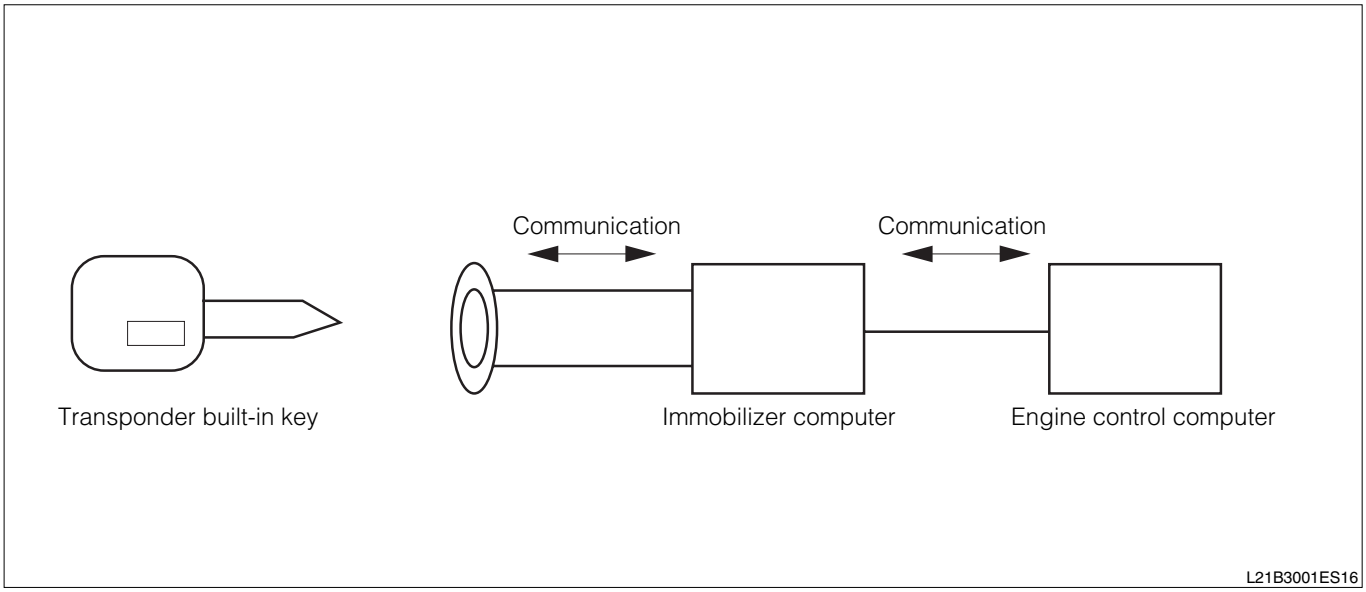
1-1 DESCRIPTION

1. The immobilizer system is provided on some specifications.
2. The immobilizer system prohibits the unauthorized start of the engine, thus enhancing the security.
3. It becomes possible to start the engine when the ID code registered in the immobilizer ECU is matched with the ID code memorized in the key.
4. When the immobilizer system is in the operating condition, the indicator lamp in the instrument panel flashes.

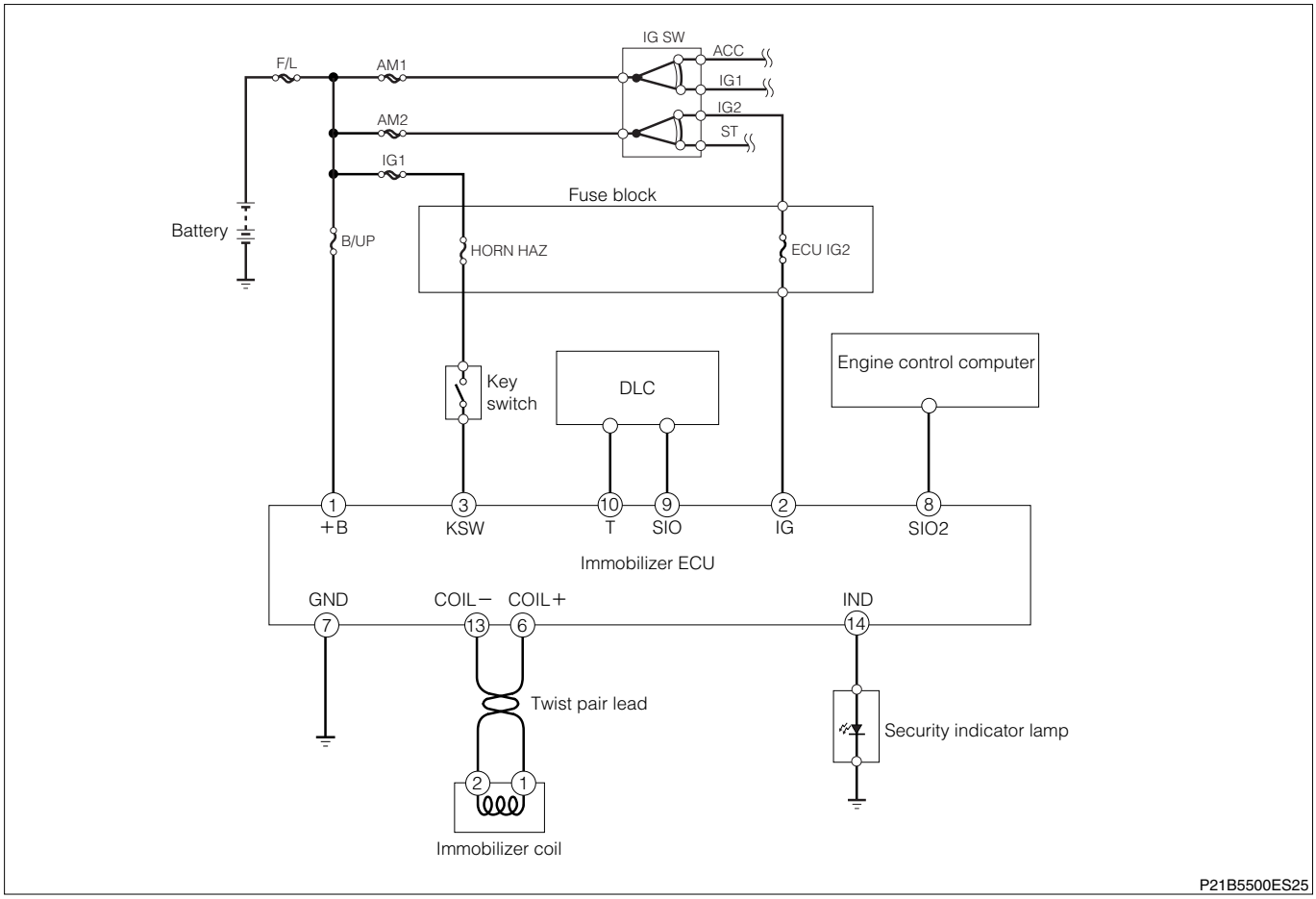
1-2 NOTES ON IMMOBILIZER SYSTEM

1. In the case of the IG key for the immobilizer equipped vehicles, there are cases where correct communication with the immobilizer ECU is impossible, thus not allowing the engine to start.
   (1) When the grip section of the key is in contact with a metal object.
   (2) When the key is close to or in contact with the key (Which incorporates a signal transmitter) for the immobilizer system of another vehicle.
2. Do not put the IG key in ultrasonic cleaners, etc.

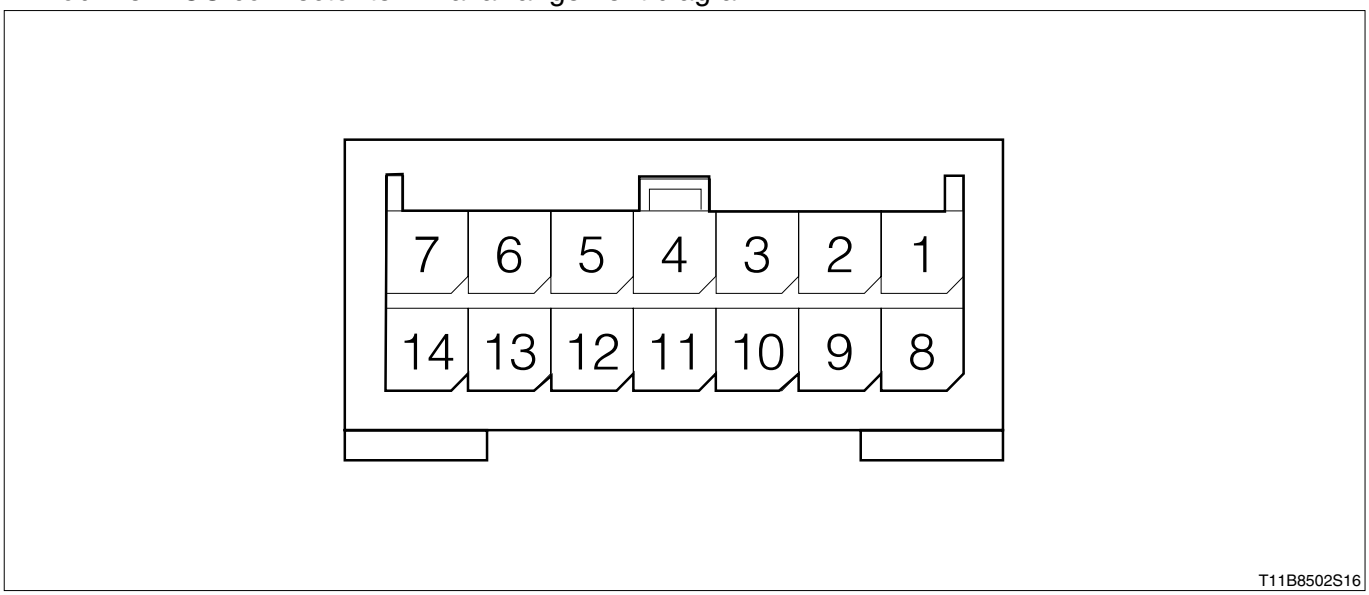
1-3 SYSTEM DRAWING



1-4 SYSTEM WIRING DIAGRAM



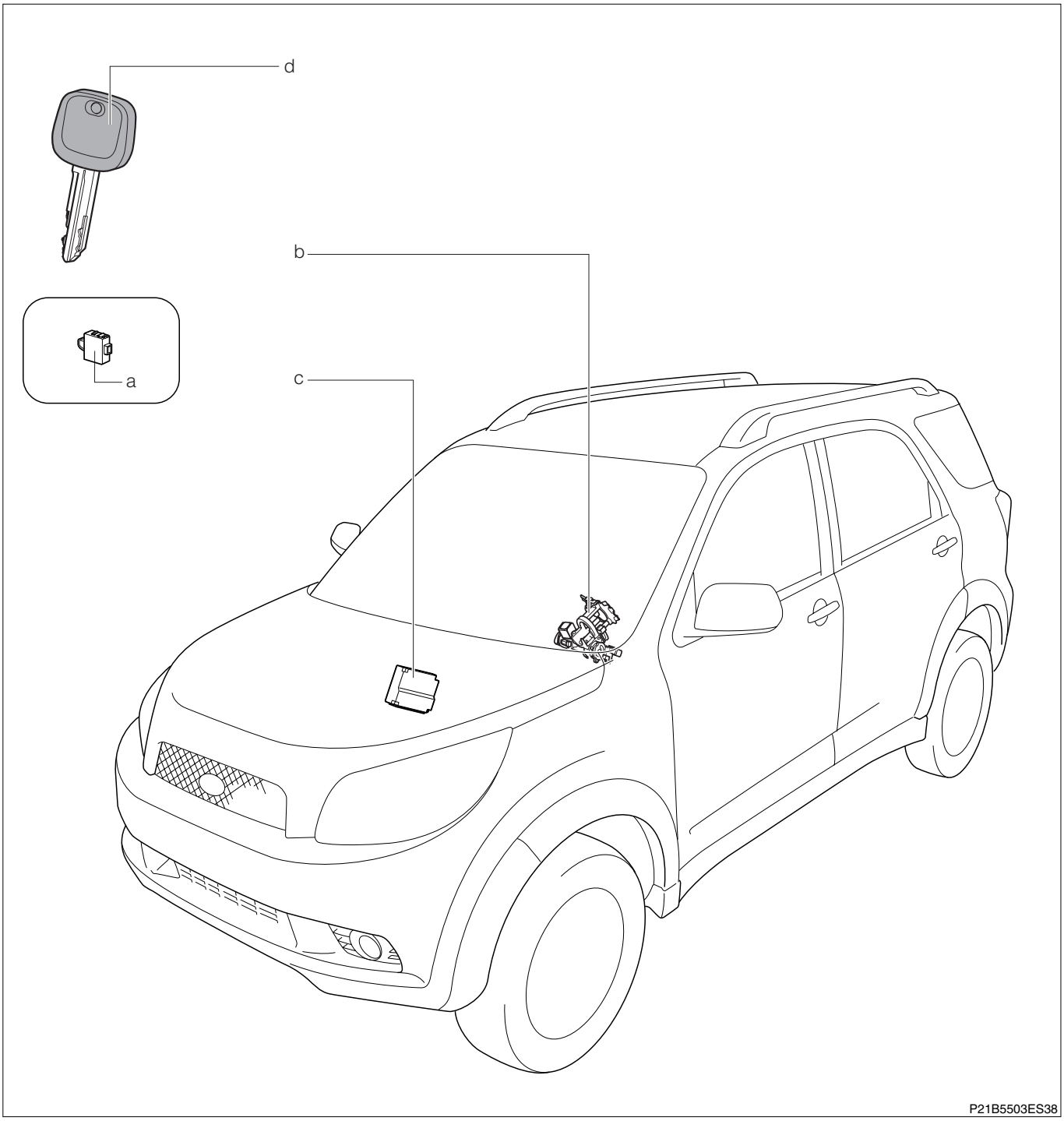
Immobilizer ECU connector terminal arrangement diagram



Immobilizer ECU terminal name

Terminal No.	Terminal code	Terminal name
1	+B	ECU power supply
2	IG	IG SW power supply
3	KSW	Key SW
4	—	—
5	—	—
6	COIL+	Transponder communication
7	GND	Earth
8	SIO2	Immobilizer communication
9	SIO	Diagnostic tester communication
10	T	Diagnostic tester communication
11	—	—
12	—	—
13	COIL−	Transponder communication
14	IND	Security indicator

1-5 **LOCATION OF COMPONENTS**



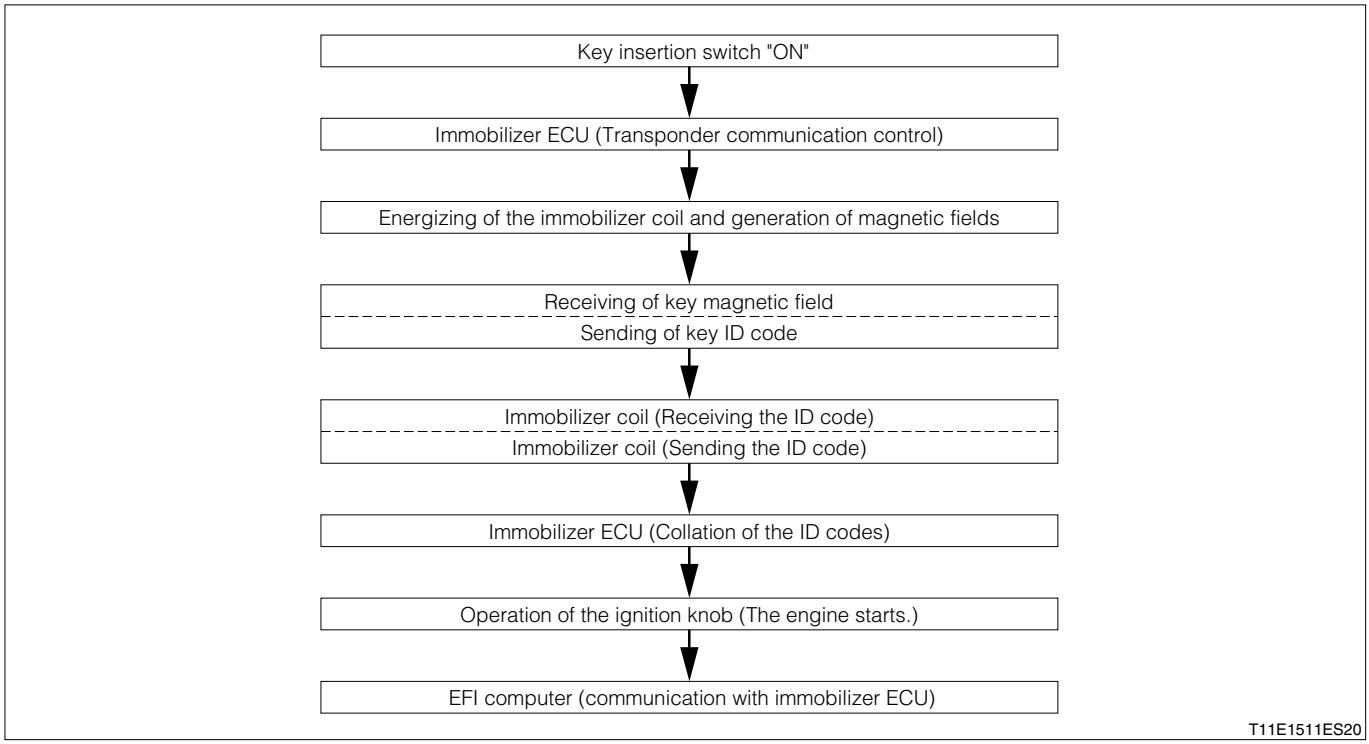
The illustration shows a typical example.

a	Immobilizer ECU
b	Steering column upper W/SW bracket
c	EFI ECU
d	Transponder

2 CONTROL

2-1 BRIEF DESCRIPTION OF OPERATION

1. The key SW is turned "ON", when the key is inserted into the IG key cylinder.
2. The immobilizer ECU energizes the immobilizer coil. As a result, a magnetic field is generated in the coil.
3. When the transponder (Chip) incorporated in the key receives the magnetic field of the coil, the ID code memorized in the chip is transmitted.
4. The ID code is received by the immobilizer coil and sent to the immobilizer ECU.
5. The immobilizer ECU performs the collation of the transmitted ID code and the registered ID code. When the codes are matched, the communication with the EFI ECU is permitted. ("UNSET" condition.) (In cases where the collation of the codes is not performed correctly, the communication with the EFI ECU remains prohibited. ("SET" condition.) (Therefore, even if the IG SW is turned "ON", the communication with the EFI ECU will not be started.)
6. When the IG SW is turned "ON" by turning the IG knob, the collation of the code with the EFI ECU is carried out.
7. If the collation of the codes is correct, the engine is started by turning the IG knob to the "START" position.


Key insertion switch "ON"
Immobilizer ECU (Transponder communication control)
Energizing of the immobilizer coil and generation of magnetic fields
Receiving of key magnetic field
Sending of key ID code
Immobilizer coil (Receiving the ID code)
Immobilizer coil (Sending the ID code)
Immobilizer ECU (Collation of the ID codes)
Operation of the ignition knob (The engine starts.)
EFI computer (communication with immobilizer ECU)
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2-2 IMMOBILIZER SYSTEM CONTROL

2-2-1 IMMOBILIZER SYSTEM OPERATING CONDITION

1. When the following conditions are satisfied, the immobilizer system is set to the operating condition. (Communication with the EFI ECU prohibited.)
   (1) The key SW is "OFF" as well as the IG SW is at "LOCK" or "ACC" position
   (2) Thirty seconds have passed after the key SW is "ON", and the IG SW is changed from "ON" → "LOCK" or "ACC" position

2-2-2 IMMOBILIZER SYSTEM RELEASED CONDITION

1. When the following conditions are satisfied, the immobilizer system is set to the released condition. (Communication with the EFI ECU allowed.)
   (1) When the ID code stored in the key and the ID code stored in the immobilizer ECU match

2-3 TRANSPONDER COMMUNICATION CONTROL

2-3-1 TRANSPONDER COMMUNICATION STARTING CONDITION

1. If any of the following conditions is met, the transponder communication (Check of the ID code of the key) starts.
   (1) In the immobilizer system "SET" condition, the key SW is "OFF" → "ON"
   (2) In the immobilizer system "SET" condition, the IG SW is changed from "LOCK" or "ACC" position → "ON"
   (3) In the immobilizer system "SET" condition, the key SW is "ON" and the IG SW is changed from "ON" → "LOCK" or "ACC" position
   (4) In the immobilizer system "SET" condition, the key SW is turned "ON" or the IG SW is turned "ON" after the ECU power "ON" reset is released

2-3-2 TRANSPONDER COMMUNICATION FINISHING CONDITION

1. When any of the following conditions is satisfied, the transponder communication (Key ID code verification) is finished.
   (1) The key SW is "OFF" as well as the IG SW is at "LOCK" or "ACC" position
   (2) Three seconds has passed after the key SW is turned from "OFF" → "ON"
   (3) Three seconds has passed after the IG SW is turned from "OFF" → "ON"
   (4) Three seconds has passed after the key SW is turned "ON" and the IG SW is turned from "OFF" → "ON"
   (5) The ID code registered in the immobilizer ECU matches the ID code memorized in the key
   (6) After an ID code not registered in the immobilizer ECU has been received three times and the key ID has been read properly

2-4 EFI ECU COMMUNICATION CONTROL

2-4-1 EFI ECU COMMUNICATION STARTING CONDITION

1. When the immobilizer system has been released and the IG SW is set to "LOCK", or set from "ACC" → "ON", the immobilizer ECU communicates with the EFI ECU.

2-4-2 EFI ECU COMMUNICATION FINISHING CONDITION

1. If any of the following conditions is met, the immobilizer ECU will inhibit communication with the EFI ECU.
   (1) During communicating with the EFI ECU, the IG SW is changed from "ON" → "LOCK" or "ACC" position
   (2) Immobilizer system "SET" status
   (3) Communication with the EFI ECU is complete

2-5 DIAGNOSIS

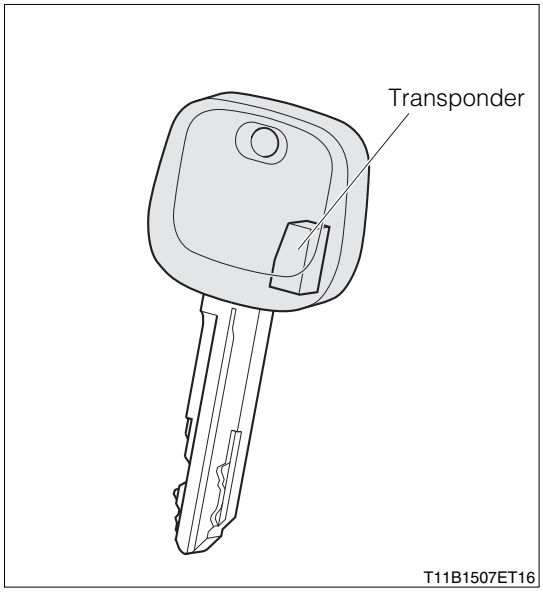
2-5-1 DESCRIPTION

1. The diagnosis means "Trouble diagnosis". In cases where an abnormality exists in the input/output system, the computer inside the sensor unit informs the check operator of the abnormal items.
2. For the details of the diagnosis, refer to the repair manual.

3 COMPONENTS

3-1 IG KEY

1. A transponder (Chip) is incorporated in the grip section of the IG key. Upon receiving the magnetic field generated by the immobilizer coil, this chip sends the ID code. Moreover, the ID code differs, depending on the IG key.

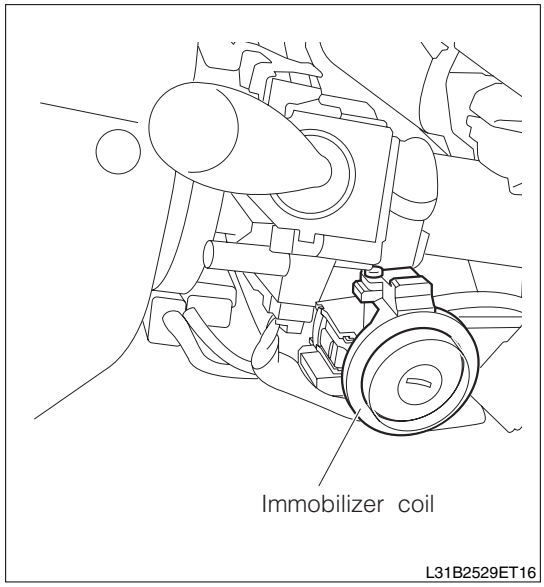


3-2 IMMOBILIZER ECU

1. The immobilizer coil is energized and the transponder communication is performed. Furthermore, the collation of ID codes is carried out with the EFI ECU.
2. It is possible to register up to four keys. Even when the battery is disconnected, the memory of ID codes of the registered key will not be lost.

3-3 IMMOBILIZER COIL

1. When electric current flows into the immobilizer coil due to the immobilizer ECU control, a magnetic field is generated and the ID code is received from the key.



3-4 EFI ECU

1. The ID code is collated by the signal from the immobilizer ECU, thus controlling the injection of fuel.

3-5 INDICATOR LAMP

1. When the immobilizer system is in the operating condition, the indicator lamp in the instrument panel flashes.